

**What is claimed is:**

1. A process for preparing pulverulent ethylene-vinyl alcohol copolymers by free-radical polymerization of ethylene and one or more vinyl esters, and optionally further monomers copolymerizable therewith, subsequent hydrolysis of the thus obtained ethylene-vinyl ester copolymers to give ethylene-vinyl alcohol copolymers, characterized in that the ethylene-vinyl alcohol copolymer, after the hydrolysis, is precipitated from the alcoholic solution by means of cooling with a temperature gradient, and optional addition of water,  
15 the temperature gradient in the case of ethylene-vinyl alcohol copolymers which derive from low molecular weight ethylene-vinyl ester copolymers having a weight-average molecular weight  $M_w$  of from 2000 to 100 000 g/mol being from  $-0.1^{\circ}\text{C}/\text{min}$  to  $-10^{\circ}\text{C}/\text{min}$ , and  
20 the temperature gradient in the case of ethylene-vinyl alcohol copolymers which derive from high molecular weight ethylene-vinyl ester copolymers having a weight-average molecular weight  $M_w$  of  $> 100 000$  g/mol being from  $-0.1^{\circ}\text{C}/\text{min}$  to  $-1^{\circ}\text{C}/\text{min}$ .
2. The process as claimed in claim 1, characterized in that cooling is effected to a temperature which is above the  $T_g$  of the solvent-containing ethylene-vinyl alcohol copolymer but below the melting point of the ethylene-vinyl alcohol copolymer.  
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3. The process as claimed in claim 1 or 2, characterized in that the high molecular weight ethylene-vinyl alcohol copolymer is first cooled to a temperature of from  $40^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  with a temperature gradient of from  $-1^{\circ}\text{C}/\text{min}$  to  $-10^{\circ}\text{C}/\text{min}$ , and the cooling is subsequently  
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continued down to a temperature of from 10°C to 35°C at a lower temperature gradient of from -0.1°C/min to -1°C/min.

- 5 4. The process as claimed in claim 1 to 3, characterized in that the precipitation of the ethylene-vinyl alcohol copolymer is promoted by addition of water.
- 10 5. The process as claimed in claim 4, characterized in that the amount of water is from 0.3 to 5.0 times the weight of the ethylene-vinyl acetate copolymer used.
- 15 6. The process as claimed in claim 1 to 5, characterized in that the thus obtained powder is resuspended in water, solvent residues are optionally removed by distillation or stripping, and the pulverulent product is isolated by filtration.
- 20 7. Ethylene-vinyl alcohol copolymers obtainable by the process as claimed in claims 1 to 6, having an ethylene content in the copolymer of from 5 to 75 mol%.
- 25 8. Ethylene-vinyl acetate copolymers as claimed in claim 7, having a particle size, determined as the mean volume diameter  $D_v$ , of from 20 to 2000  $\mu\text{m}$ .
- 30 9. Ethylene-vinyl alcohol copolymers as claimed in claim 7 or 8 having a complex melt viscosity of from 0.5 to 100 000 Pas (at 180°C; oscillating measurement at 1 Hz with plate/plate test system).
- 35 10. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 or 9 for producing foils, films and laminates.

11. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 for producing moldings.
- 5 12. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as coating compositions.
- 10 13. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as an additive for powder coatings.
14. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as adhesives.
- 15 15. The use of the ethylene-vinyl alcohol copolymers as claimed in claim 7 to 9 as binders in building materials.